UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/828,370	03/28/97	SMITH J	042390.P3973

EXAMINER	
TROST IV,W	
ART UNIT	PAPER NUMBER
2744	8

DATE MAILED: 10/20/99

LM02/1020

EDWIN H TAYLOR
BLAKELY SOKOLOFF TAYLOR & ZAFMAN
7TH FLOOR
12400 WILSHIRE BOULEVARD
LOS ANGELES CA 90025

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
08/828,370	Smith
Examiner	**Group Art Unit**
William Trost	2744

☒ Responsive to communication(s) filed on *Aug 23, 1999* .

☒ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1, 2, 4-9, and 11-21* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1, 2, 4-9, and 11-21* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *6*

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-2, 4-9, 11-14 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a switch which is coupled between an antenna and two front end RF receivers, does not reasonably provide enablement for a switching device for switching between a first RF signal *received from a first RF receiver and a second RF receiver.* The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make, and/or use, the invention commensurate in scope with these claims. In particular, note the specification page 5, line 25 - page 6, line 5.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2, 4-9, 11-18, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oto in view of Smith et al (hereinafter Smith).

Regarding claim 1, Oto discloses a dual band radio receiver (Fig. 3) comprising a local oscillator (22) configured to generate a LO signal, a first mixer device (20A) configured to receive the LO signal and a first RF signal (a) within a first band (between 500 and 1500 MHZ) and responsive to output a first IF signal, a second mixer device (20B) configured to receive the LO signal and a second RF signal (b) within a second band (between 1500 MHZ and 2500 MHZ) and output a second IF signal (note abstract, for both IF signals), and the local oscillator is configured to operate within a third band (900 to 2100 MHZ) located between the first and second bands (Local oscillator covers frequencies overlapping the first and second bands, and thus, is located between both bands). Oto discloses a second two way switching device (56) for switching between a first and second IF signal. Oto fails to disclose the first two way switching device, where the switching devices are responsive to a base band controller.

However, Smith teaches a dual band radio receiver (Figure 14) in which both a first two way switching device (709) and a second two way switching device (710) are controlled via a base band controller (via band select signal 719). Smith also teaches that it is known in the art to control a local oscillator (such as frequency synth 105) from a base band controller (103). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include multiple two-way switching devices in order to properly down convert a received signal.

Regarding claim 7, Oto further discloses that the third band is positioned half-way between the first and second bands (note, center of LO signal is 1500 MHZ, which is also halfway between edge of first band, 500 MHZ and edge of second band, 2500 MHZ).

Regarding claim 15, Oto discloses in a dual-band radio receiver (Fig. 3) configured to receive RF signals within first and second bands (500-1500 and 1500-2500 MHZ, respectively), a method for converting the RF signal into an IF signal comprising the steps of determining whether the RF signal belongs to one of the first or second bands (Col. 4;1-12, routing signals to appropriate amplifiers), and generating the IF signal by mixing the RF signal with an LO signal belonging to a third band located between the first and second bands (Local oscillator covers frequencies overlapping the first and second bands 900-2100 MHZ, and thus, is located between both bands). Oto fails to disclose that the generation of the IF signal is in response to a base band controller.

However, Smith teaches that it is known in the art to control a local oscillator (such as frequency synth 105) from a base band controller (103). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include multiple two-way switching devices in order to properly down convert a received signal.

Regarding claims 16-18, Oto further discloses that if the RF signal belongs to a first band (a), it is routed to a first mixer device (20A) and if the RF signal belongs to the second band (b), it is routed to a second mixer device (20B). Oto further discloses that the third band is positioned

half-way between the first and second bands (note, center of LO signal is 1500 MHZ, which is also halfway between edge of first band, 500 MHZ and edge of second band, 2500 MHZ).

Regarding claims 2, 9, Oto discloses all the particulars of claim 1, as discussed above. Oto further discloses the use of a single IF filter (28) and a switching device (56) coupled thereto, as well as the IF filter being coupled to the mixer devices (via switch 56). Oto discloses that the selected band is passed to a single IF filter. Oto fails to explicitly disclose the use of dual IF filters in the signal path, but as Oto discloses that it is known in the art to separate the RF signals into dual processing sections, where each signal is mixed separately, and Oto further discloses it is known to filter both paths (note filters 54, 58), it would have been obvious to one of ordinary skill in the art at the time of the invention to include a plurality of IF filters connected to the mixer circuit in order to provide redundancy within the system, as the end product of the demodulation process is the same in each case.

Regarding claim 3, Oto discloses all the particulars of the claim except for the control circuit coupled to the local oscillator. However, Smith teaches in an analogous art, a multi-band radio receiver in which a control circuit (103) is connected to a local oscillator (105) and a switching device (104). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include a controller as taught by Smith, to the system of Oto, in order to provide automated control of the selection of an appropriate frequency band.

Regarding claims 4-6, Oto discloses all the particulars of the claim except the frequency bands being 1.910-1.930 GHz, 2.155-2.2385 GHZ, and 2.40-2.4835 GHZ for the first, third, and

second frequency bands, respectively. Oto discloses the frequency bands being between .5 and 2.5 GHZ, as discussed above, in the rejection of claims 1 and 7.

However, Smith teaches a dual-band radio receiver which utilizes the 1.910 -1.930 GHz band and the 2.4-2.4835 GHz band (note Col. 3;8-18, description of frequency bands in which the radio receiver operates). Smith further teaches that for reception of frequencies, a local oscillator (721) outputs a frequency (Fn) such that generates an IF signal for two frequency bands, located Fn above and below the intermediate frequency, i.e. - positioned halfway between the two frequency bands. As 2.155-2.2385 GHz is halfway between the 1.910-1.930 and 2.4-2.4835 GHz bands, Smith implicitly teaches that the third band (local oscillator frequency) is in the 2.155-2.2385 GHz range. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the particular frequency bands in order to expand communications capabilities by utilizing unlicensed spectrum.

Regarding claim 8, Oto discloses a system comprising a dual band radio receiver (Fig. 3) comprising a local oscillator (22) configured to generate a LO signal, a first mixer device (20A) configured to receive the LO signal and a first RF signal (a) within a first band (between 500 and 1500 MHZ) and responsive to output a first IF signal, a second mixer device (20B) configured to receive the LO signal and a second RF signal (b) within a second band (between 1500 MHZ and 2500 MHZ) and output a second IF signal (note abstract, for both IF signals), and the local oscillator is configured to operate within a third band (900 to 2100 MHZ) located between the first and second bands (Local oscillator covers frequencies overlapping the first and second bands,

and thus, is located between both bands). Oto also discloses a second two way switching device (56) for switching between first and second IF signals. Oto fails to discloses a transmitter circuit, but does disclose the use of communication services (CS signals).

However, to provide further evidence, Smith teaches a system comprising a transmitter circuit (1) and a dual band radio receiver (7), as in the system of Oto. Smith teaches a dual band radio receiver (Figure 14) in which both a first two way switching device (709) and a second two way switching device (710) are controlled via a base band controller (via band select signal 719). Smith also teaches that it is known in the art to control a local oscillator (such as frequency synth 105) from a base band controller (103). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include a transmitter circuit in order to provide two-way communication between users.

Regarding claim 10, Oto discloses all the particulars of the claim except for the control circuit coupled to the local oscillator. However, Smith teaches in an analogous art, a multi-band radio receiver in which a control circuit (103) is connected to a local oscillator (105) and a switching device (104). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include a controller as taught by Smith, to the system of Oto, in order to provide automated control of the selection of an appropriate frequency band.

Regarding claims 11-13, Oto discloses all the particulars of the claim except the frequency bands being 1.910-1.930 GHz, 2.155-2.2385 GHz, and 2.40-2.4835 GHz for the first,

third, and second frequency bands, respectively. Oto discloses the frequency bands being between .5 and 2.5 GHz, as discussed above, in the rejection of claims 1 and 7.

However, Smith teaches a dual-band radio receiver which utilizes the 1.910 -1.930 GHz band and the 2.4-2.4835 GHz band (note Col. 3;8-18, description of frequency bands in which the radio receiver operates). Smith further teaches that for reception of frequencies, a local oscillator (721) outputs a frequency (Fn) such that generates an IF signal for two frequency bands, located Fn above and below the intermediate frequency, i.e. - positioned halfway between the two frequency bands. As 2.155-2.2385 GHz is halfway between the 1.910-1.930 and 2.4-2.4835 GHz bands, Smith implicitly teaches that the third band (local oscillator frequency) is in the 2.155-2.2385 GHz range. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the particular frequency bands in order to expand communications capabilities by utilizing unlicensed spectrum.

Regarding claim 14, Oto further discloses that the third band is positioned half-way between the first and second bands (note, center of LO signal is 1500 MHZ, which is also halfway between edge of first band, 500 MHZ and edge of second band, 2500 MHZ).

Regarding claims 19-20, Oto discloses all the particulars of the claim except the frequency bands being 1.910-1.930 GHz and 2.40-2.4835 GHz for the first and second frequency bands, respectively. Oto discloses the frequency bands being between .5 and 2.5 GHz, as discussed above, in the rejection of claims 1 and 7.

However, Smith teaches a dual-band radio receiver which utilizes the 1.910 -1.930 GHz band and the 2.4-2.4835 GHz band (note Col. 3;8-18, description of frequency bands in which the radio receiver operates). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the particular frequency bands in order to expand communications capabilities by utilizing unlicensed spectrum.

Regarding claim 21, Oto discloses a method for providing a dual-band radio receiver (Fig. 1) comprising the steps of providing first (20A) and second (20B) mixers and coupling a local oscillator (22) to the first and second mixers, where the local oscillator is configured to generate signals within a third band position approximately midway between the first and second bands. (Note, Local oscillator covers frequencies between the first and second bands, and thus, is located between both bands). Oto discloses the providing of first (signal A) and second (signal B) RF front end receivers. Oto fails to explicitly disclose a circuit which determines whether the RF signal input is one of the first and second bands, but discloses a splitter (52) which splits the RF signal such that the first and second bands are sent to first and second mixers, respectively.

However, Smith teaches in an analogous art, a dual-band radio receiver which includes a circuit (mode controller 103) which determines whether a received signal is in the first or second band (note, controller causes filter 117 to filter to detect appropriate signals) and couples the signal to the appropriate destination (demodulator in Smith's case, Mixer in Oto). Smith further teaches that both frequency bands can be monitored simultaneously (Col. 18;18-28 and 45-50). Smith also teaches that it is known in the art to control a local oscillator (such as frequency synth

105) from a base band controller (103). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include a circuit which determines whether the RF signal is in a first or second frequency band in order to prevent errors in demodulation of the signal.

5. Applicant's arguments filed 9/21/98 have been fully considered but they are not persuasive.

Applicant argues that Smith's controller fails to controls selection of a signal in either a first (narrowband) or second (spread spectrum) frequency band, and controls first and second switches (709, 710) as well as a local oscillator (control of frequency synthesizer). The examiner respectfully disagrees. As stated above, each of the elements are read upon the claim in Smith, and as each of the elements in Smith perform the same functions as applicant claims, thus rejection is deemed valid.

6. **Any response to this final action should be mailed to:**

Box AF
Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:
(703) 308-9051, (for formal communications intended for entry)

Or:
(703) 305-9508 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William Trost whose telephone number is (703) 308-5318. The examiner can normally be reached on Monday-Friday from 6:30 a.m to 3:00 p.m.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

William G. Trost
Primary Examiner

October 19, 1999